



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,915	06/08/2001	Robert G. Wilhelm	2000-008/9/14	1111

7590 07/02/2004  
Steve Gardne, Esquire  
Kilpatrick Stockton, LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101-2400

EXAMINER

DESIRE, GREGORY M

ART UNIT PAPER NUMBER

2625

DATE MAILED: 07/02/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/876,915

Applicant(s)

WILHELM, ROBERT G.

Examiner

Gregory M. Desire

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30 is/are allowed.
- 6) ☒ Claim(s) 1-6, 11, 15-24, 26-29 and 31 is/are rejected.
- 7) ☒ Claim(s) 7-10, 12-14 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-6 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Sasaki (6,373,491).

Regarding claims method claims 1 and 20 Sasaki discloses,

Obtaining coordinate data and normal vector data associated with each point of a starting set of points, where the starting set comprises at least three non-linear points (note fig. 15 and col. 13 lines 10-20 lines cite coordinate data and normal vector of a starting set); and

Determining a first estimated relationship between the pluralities of points based on the coordinate data and the normal vector data associated with the starting set of points (note col. 14 lines 1-8, cites coordinate point and normal vector is used to compose a shape, thus determining a first relationship between plurality of points and normal vector).

Regarding claim 3 Sasaki discloses,

Where the starting set further comprises points defining a boundary of the plurality of points (note figs 19a-19d in connection with col. 18 lines 1-29, polygon shows point defining boundary of said points).

Regarding claim 4 Sasaki discloses,

Where determining the first estimated relationship between the plurality of points further comprises interpolating between the starting set of points according to a predetermined estimator that incorporates the obtained coordinate data and the obtained normal vector data and generates estimated coordinate data and estimated normal vector data (note col. 8 lines 13-24, determining shape comprise interpolating between set of points from coordinate data and vector data).

Regarding method claim 5 Sasaki discloses,

Where the predetermined estimator comprises a function for representing a multi-dimensional relationship (note col. 8 line 5-12, the examiner interprets function represent three-dimensional shape as multi-dimensional relationship).

Regarding claim 6 Sasaki discloses,

Where the predetermined estimator comprises a cubic spline function (note col. 20 lines 1-3 and 20-45, examiner interprets third order bezier curve as a cubic spline function).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 11, 15-19, 21-24, 26-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in further view of Nishikawa (6,556,198).

Regarding method claims 2 and 17, computer readable medium claim 21, system claim 24 and 31 Sasaki discloses,

First estimated relationship between pluralities of points. However is silent teaching a point having a maximum estimated error within the first estimated relationship and obtaining coordinate when target point is greater than a predetermined error limit. Nishikawa discloses a point having a maximum estimated error within the first estimated relationship (note col. 9 lines 6-20, examiner interprets farthest point as maximum estimated error) and obtaining coordinate when target point is greater than a predetermined error limit (note fig. 27). Therefore it would have been obvious to one having ordinary skills in the art to include a point having a maximum estimated error within the first estimated relationship and obtaining coordinate when target point is greater than a predetermined error limit in the system of Sasaki as evidenced by Nishikawa. Sasaki discloses first estimated relationship between pluralities. Nishikawa

in the same field of endeavor discloses obtaining coordinate of target points to optimize interpolation process (note col. 10 lines 5-7).

Regarding method claim 11 Sasaki and Nishikawa discloses,

Where the predetermined error limit corresponds to a predetermined level of accuracy (note Nishikawa fig. 27 S814)

Regarding claims 15 and 19 Sasaki and Nishikawa discloses,

Removing data associated with a first estimated relationship between pluralities of points based on normal vector data (note Nishikawa col. 2 lines 33-35 examiner interprets changing step, where the changed data is removed to read on the claim).

Regarding claims method 16, computer readable claim 21 and system claim 24 and 31

Sasaki is silent disclosing automatically determining whether further measurements are required base on normal vector data. However Nishikawa discloses automatic determining of further measurements (note col. 10 lines 5-7, 46-50 and col. 11 lines 53-55). Lines perform automatic determining of optimum algorithm based on input, thus constantly achieving high speed processing. Therefore it would have been obvious to a person having ordinary skill in the art to include an automatic determining of further measurement in the system of Sasaki as evidenced by Nishikawa. Achieving constant high speed processing (note Nishikawa col. 11 lines 55-57) would be desirable feature in Sasaki's image processor improving efficiency as in Nishikawa.

As to local rate of change with respect to vector (note Nishikawa optimum algorithm).

Regarding method claim 18, computer-readable medium claim 23 and system claim 27 Sasaki and Nishikawa discloses,

Where the predetermined measurement criteria comprise criteria selected from the group consisting of physical limitation error limitations, and ruled-based Criteria (note Nishikawa col. 10 lines 11-15 optimum algorithm examiner interprets as rule based criteria).

Regarding computer-readable medium claim 22 and system claim 28 Sasaki and Nishikawa discloses,

Where the predetermined estimator comprises a function for representing a multi-dimensional relationship (note Sasaki col. 8 line 5-12, the examiner interprets function represent three-dimensional shape as multi-dimensional relationship).

Regarding system claim 26 Sasaki and Nishikawa discloses,

An adaptive sampling mechanism having predetermined criteria (which read on Nishikawa's (fig. 16), wherein an adaptive sampling mechanism is operative to generate a measurement decision based on an evaluation of coordinate data and normal vector data with respect to the predetermined measurement criteria (note Nishikawa col. 10 lines 25-50, generates results based on input data of data measured).

Regarding system claim 29 Sasaki and Nishikawa discloses,

Where the predetermined estimator comprises a cubic spline function (note Sasaki col. 20 lines 1-3 and 20-45, examiner interprets third order bezier curve as a cubic spline function).

***Allowable Subject Matter***

5. Claim 30 is allowed.
6. The following is an examiner's statement of reasons for allowance: Prior art fails to disclose limitations of error limitation as claimed in combination with other limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Claims 7-10, 12-14 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding method claim 7 and system claim 25,

Prior art fails to disclose the error relationship as claimed. Claims 8-10 depend on claim 7. Therefore are also objected.



Art Unit: 2625

Regarding claim 12,

Prior art fails to disclose a second estimated relationship between plurality of points representative of a subset of the plurality of points based on the second set of coordinate data and normal vector in combination with other limitations. Claims 13-14 depend on claim 12. Therefore are also allowable.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory M. Desire whose telephone number is (703) 308-9586. The examiner can normally be reached on M-F (8:30-6:00) Second Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory M. Desire

Application/Control Number: 09/876,915  
Art Unit: 2625

Page 9

Examiner  
Art Unit 2625

*Gregory Davis*

G.D.  
June 27, 2004